

REMARKS

Entry of the foregoing and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. § 1.111, and in light of the remarks which follow, are respectfully requested.

By the above amendments, the specification has been amended by replacing an occurrence of "<38>" with "<37>". Claim 6 has been amended for readability purposes, and now recites "regions of two organometallic layers adjacent to each other, the regions being surrounded by these four pillar ligands." Claims 12, 14, 16 and 20 have been amended for readability purposes.

In the Official Action, claim 6 stands rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. This rejection is moot in view of the above amendments, in which claim 6 has been amended to recite "regions of two organometallic layers adjacent to each other, the regions being surrounded by these four pillar ligands." Applicants respectfully submit that claim 6 as amended is not indefinite. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the § 112 rejection.

Claims 1-6, 8-21, 23-29, 35, 36, 38 and 41 stand rejected under 35 U.S.C. § 103 as allegedly obvious over *Angew. Chem. Int. Ed.*, 1999, 38 by *Kondo et al*, in view of *J. Phys. Chem.* 1962, 66(6), 1070 by *Millich et al* and *Chem. Rev.* 2001, 101, 1629 by *Moulton et al*. Claim 7 stands rejected under 35 U.S.C. § 103 as allegedly obvious over *Kondo et al*, *Moulton et al*, and *Millich et al*, and further in view of U.S. Patent No. 6,468,657 to *Hou et al*. Claim 22 stands rejected under 35 U.S.C. § 103 as allegedly obvious over *Kondo et al*, *Moulton et al*, and *Millich et al*, and further in view of U.S. Patent No. 5,149,513 to *Takahama et al*. Claim 37 stands rejected under 35 U.S.C. § 103 as allegedly obvious over *Kondo et al*, *Moulton et al*, and *Millich et al*, and further in view of *J. Am. Chem. Soc.* 2003,

125, 7814-7815 by *Uemura et al.* Claims 39 and 40 stand rejected under 35 U.S.C. § 103 as allegedly obvious over *Kondo et al*, *Moulton et al*, and *Millich et al*, and further in view of U.S. Patent No. 4,818,898 to *Anderson et al.* Withdrawal of the above rejections is respectfully requested for at least the following reasons.

Independent claim 1 recites an organometallic complex structure, and independent claim 35 recites a method for producing an organometallic complex structure. Exemplary organometallic complex structures and processes are disclosed in Figures 4, 21 and 26. As is apparent from such exemplary embodiments, the recited organic polymer capable of interacting with the metal ion, is employed in addition to the metal ion, an organic compound capable of binding to the metal ion, and a pillar ligand capable of binding to the metal ion.

Kondo et al does not disclose or suggest each feature recited in independent claims 1 and 35. For example, *Kondo et al* does not disclose or suggest an organometallic complex structure comprising an organic polymer capable of interacting with the metal ion, in addition to the other components recited in claim 1. Further, *Kondo et al* does not disclose or suggest a method for producing an organometallic complex structure, comprising the use of an organic polymer capable of interacting with the metal ion, in addition to the other components recited in claim 35. Such deficiencies of *Kondo et al* have been acknowledged by the Patent Office at page 3 of the Official Action.

Millich et al relates to coacervation induced by heavy metal ions. Coacervation is a phenomenon in which a polymer colloid solution is separated into two liquid phases by an introduction of a third component, providing one phase rich in colloid, and the other phase as an equilibrium solution of the third component which caused the coacervation. As noted above, *Kondo et al* has been relied on for disclosing an organometallic complex structure. Therefore, one of ordinary skill in the art would have had no apparent reason to modify the

organometallic complex structure of *Kondo et al* by adding a component used in the coacervation process described in *Millich et al*. As such, it would not have been obvious to combine *Kondo et al* and *Millich et al* as proposed in the Office Action.

As noted in Applicants' previous response, the addition of an organic polymer capable of binding to the metal ion to the organometallic complex structure of the present application can make it possible, for example, to control the crystal growth to obtain an organometallic complex structure having a plate-like structure, which otherwise cannot be obtained without an organic polymer. Furthermore, Applicants believe that the presence of a slight amount of the organic polymer may effectively stabilize the specific and unique structure of the organometallic complex. None of the applied documents discloses or suggests such effects achievable by exemplary organometallic complex structures and processes contemplated by Applicants.

The Patent Office has apparently relied on *Moulton et al* for teaching the use of the PVSA of *Millich et al*, in the preparation of the *Kondo et al* structure. See Official Action at pages 3-4. In this regard, *Moulton et al* discloses that work done on inorganic network structures, has been extrapolated into the realm of metal-organic compounds and coordination polymers by employing a "node and spacer" approach, to generate the networks shown in Scheme 1. See pages 1632-33. Such disclosure does not teach or suggest the use of the PVSA disclosed by *Millich et al*, in the preparation of the *Kondo et al* structure. Rather, *Moulton et al* merely discloses general comments concerning the selection of materials in the preparation of a node and spacer structure. When considered together, the applied documents at best teach the use of PVSA in a coacervation process. There is simply no disclosure or suggestion of employing the PVSA of *Millich et al* as a component of an organometallic complex structure that is employed **in addition to** a metal ion, an organic compound capable

of binding to the metal ion, and a pillar ligand capable of binding to the metal ion, as is presently claimed.

The other secondary applied documents (i.e., *Hou et al*, *Takahama et al*, *Uemura et al* and *Anderson et al*), fail to cure the above-described deficiencies of *Kondo et al*, *Millich et al* and *Moulton et al*. In this regard, the Patent Office has relied on *Hou et al* for teaching altering pore size of organic layers with exposure to certain conditions including steric bulk and polarity. *Takahama et al* has been relied upon for teaching organic pillars expanding in the stimulus of a solvent. *Uemura et al* has been relied upon for teaching mixing a metal ion with an organic compound in a ratio of 1:20. *Anderson et al* has been relied upon for teaching applying pressure or molding crystals. Even if such secondary applied documents would have been employed in the manner suggested by the Patent Office, such documents fail to provide the requisite reason to combine *Kondo et al* and *Millich et al*.

In view of the foregoing, Applicants respectfully submit that independent claims 1 and 35 are patentable over the cited documents and thus the rejections should be withdrawn. Additionally, claims 2-29 and 36-41 depend from claims 1 or 35 and thus are patentable over the cited documents at least by virtue of their dependency.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited.

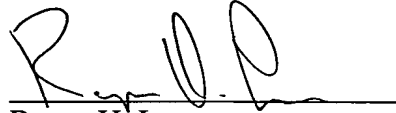
If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: June 18, 2009

By:


Roger H. Lee
Registration No. 46317

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620